

Title: High-gravity-assisted green synthesis of palladium nanoparticles: the flowering of nanomedicine

Mahsa Kiani

University of Technology, Tehran, Iran

Abstract

This study investigated the synthesis of Pd nanoparticles (NPs) using a high-gravity technique mediated by *Salvia hispanica* leaf extracts. Biological assays confirmed their antibacterial activity against gram positive (*S. aureus*) and gram negative (*E. coli*) bacteria with significant antioxidant activity in comparison with the standards as well as low cellular toxicity on PC12 and HEK293 cell lines. To the best of our knowledge, this study can be considered as the first investigation of Pd-NPs synthesized by *Salvia hispanica* leaf extracts assisted by a high-gravity technique. In addition, the mentioned green synthesis procedure led to the formation of nanoparticles with considerable antibacterial properties independent of the morphology and texture of the green media of these nanoparticles. Considering the increasing rate of antimicrobial resistant bacteria deaths worldwide, this study introduces a novel green synthesis method and non-antibiotic nanoparticle which should be studied for a wide range of medical applications.

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Speaker Biography:

Mahsa Kiani, *University of Technology, Tehran, Iran*

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